Natural Heritage & Endangered Species Program
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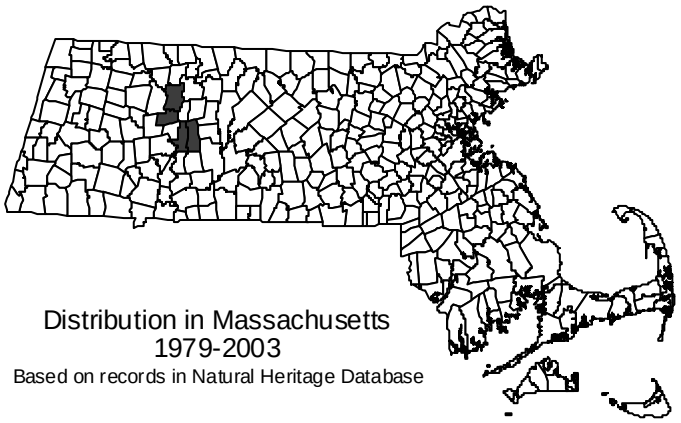
Black Gum - Pin Oak - Swamp White Oak "Perched" Swamps

State Status: None
Federal Status: None



Description: This plant community is a deciduous swamp forest community containing red maple (*Acer rubrum*), black gum or tupelo (*Nyssa sylvatica*), pin oak (*Quercus palustris*), and swamp white oak (*Q. bicolor*). The forest canopy is generally closed, but ranges from 50 to 100% coverage of leaves in the summer. The stands are a mosaic of microsites with different degrees of wetness supporting slightly different plant associations. The wettest sites have a rich sedge and shrub layer under the canopy of trees and the drier sites add hemlock and birch with an understory of shrubs.

Environment: In general, the swamp forest occurs in areas with little or no slope. The soils are silty or sandy with little accumulation of organic material. The surface topography is hummock and hollow with the hummocks about 0.5 m (about 1.5 ft) high. With the exception of some of the sedges, most of the vegetation is confined to the hummocks. The sites are wet, at least seasonally, flooding in the spring and drying out over the summer.

Characteristic Species: Red maple is the most common canopy species in these swamps. Hemlock (*Tsuga canadensis*) and Beech (*Fagus grandifolia*) may be dominant or codominant species with red maple in some areas of the swamps. In this association there are several species more commonly found along the coastal plain to the south. These include the species giving their name to the association: black gum or tupelo, pin oak, and swamp white oak. White pine (*Pinus strobus*) occurs in about half of the stands investigated. Yellow birch (*Betula alleghaniensis*) was consistently present but at low densities.

The moderately dense shrub layer is generally similar to the other forested wetlands of Western Massachusetts. No one species of shrub is always present, although arrowwood (*Viburnum dentatum*), highbush blueberry (*Vaccinium corymbosum*), winterberry (*Ilex verticillata*), and shadbush (*Amelanchier* sp.) are usually encountered. The wettest sites also have spicebush (*Lindera benzoin*) or often buttonbush (*Cephalanthus occidentalis*). Mountain laurel (*Kalmia latifolia*) is found in the drier sites, often in dense thickets. Most species that make up the tree overstory are also present in the shrub layer.

The herbaceous layer includes a variety of species. Most sites have sedges of any one of several species. Cinnamon fern (*Osmunda cinnamomea*) is the most characteristic herbaceous species found. One of the most striking characteristics of this swamp forest is the high coverage of ferns. Netted chainfern (*Woodwardia areolata*), a southern coastal plain species occurs at some of the sites. No state-listed rare species are known from this community.

Range: The species giving their names to the association are at or near the northern limits of their ranges in the Connecticut River Valley of Massachusetts; the association reaches its northern limits Massachusetts in the transition zone between the Oak Chestnut (Mixed Oak) Association to the south and the Hemlock - Northern Hardwood Association to the north.

Geology and Origins: This association typically occurs on old glacial lake beds of Glacial Lake Hitchcock in the Connecticut River Valley of Massachusetts and Connecticut. These lake bottoms are characterized by layers of clay overlain by varying depths of silt and sand. Wetlands supporting the community are typically "perched", not directly connected with the regional water tables, but are kept from draining by the relatively impermeable nature of the clays and silts making up the mineral soils. (There is likely some, slow, connection between the aquifers along the margins of the wetlands and by slow vertical movement.) The association is not found in the floodplains of the rivers currently traversing the lake bottom. The combination of a clay layer overlain by sand or silt appears to provide the appropriate conditions for the development of this type of swamp forest in Connecticut as well.

Status in Massachusetts: The abundance of similar sites now under cultivation suggests that this association may have been much more common prior to widespread clearing and draining for agriculture. Remnants of the swamp forest can be found in patches in scattered areas in the old lake bottom. The best example of this type occurs at Great Swamp, Whately, where several hundred acres remain. The abundance of overstory hemlock and beech in portions of the Great Swamp, as well as the large size of individual pin and swamp white oaks (up to 2.5 to 3 feet DBH) suggest that portions of this site have not been disturbed for many years. Elsewhere, stands of different ages have apparently regenerated after cutting in the past. All of the stands observed in an inventory showed some signs of disturbance such as ditching or logging. Several sites have been invaded by buckthorn (*Rhamnus frangula*), which is persistent and takes up space that native species might better occupy.

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